



1751  
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PATENT

Case Docket No.: **41079**

In re Application of: **Yoshihiro MAEDA et al.**

Serial No.: **09/703,959**

Patent Art Unit: **1751**

Filed: **November 1, 2000**

Examiner: **B. Mruk**

For: **WATER-SOLUBLE POLYMER AND ITS USE**

COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, VA 22313-1450

Transmitted herewith is an Amendment in the above-identified application:

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GROUP 1700

☐ Applicant claims small entity status. See 37 CFR 1.27.

☐ No additional fee is required.

The fee has been calculated as shown below:

	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NO. PREVIOUSLY PAID FOR	PRESENT EXTRA	SMALL ENTITY		OTHER THAN A SMALL ENTITY	
				RATE	ADDIT. FEE	RATE	ADDIT. FEE
TOTAL	12	- 20 =	0	x 9 =	\$	x 18 =	\$
INDEP	1	- 3 =	0	x 42 =	\$	x 84 =	\$
<input type="checkbox"/> FIRST PRESENTATION OF MULT. DEP. CLAIM				+ 140 =	\$	+ 280 =	\$
If the difference in Col. 1 is less than zero, enter "0" in Col. 2				TOTAL	\$	TOTAL	\$

☒ Applicant(s) petition(s) for an extension of 1 month(s) to respond and submits herewith the fee of \$ 110.00.

☐ Please charge my Deposit Account No. 18-2220 in the amount of \$\_\_\_\_\_. A duplicate copy of this sheet is attached.

☒ A check in the amount of \$ 110.00 is attached.

☒ The Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 18-2220. A duplicate copy of this sheet is attached.

☒ Any additional excess claim fees under 37 C.F.R. § 1.16.

☒ Any additional patent application processing fees under 37 C.F.R. § 1.17.

Dated: Sept 2, 2003

Roylance, Abrams, Berdo & Goodman, L.L.P.  
1300 19<sup>th</sup> Street, N.W., Suite 600  
Washington, D.C. 20036  
(202) 659-9076

Garrett V. Davis  
Attorney of Record  
Reg. No. 32,023



41079

#73  
PATENT  
9/18/03

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of :  
Yoshihiro MAEDA et al. : Group Art Unit: 1751  
Serial No.: 09/703,959 : Examiner: B. Mruk  
Filed: November 1, 2000 :  
For: WATER-SOLUBLE POLYMER AND ITS USE :

**RESPONSE**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

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Sir:

In the May 7, 2003 Office Action, claims 1-12 are rejected over European Patent No. 874 008, U.S. Patent No. 5,549,852 to Bell and U.S. Patent No. 5,733,857 to Yamaguchi et al. For the reasons discussed below, the claims are submitted to be allowable over the art of record. Accordingly, reconsideration and allowance are requested.

**Rejection Over EP 874 008**

Claims 1-12 are rejected under 35 U.S.C. § 102(b) as being anticipated by EP 874 008. The rejection is based on the position that EP '008 discloses a maleic acid-based copolymer having a molecular weight of at least 1,000 to 100,000, a calcium ion-capturability of 300 mg calcium carbonate per gram or higher, and a clay-dispersibility of at least 1.4.

The rejection appears to be based on the position that the calcium ion-capturability value of EP '008 is the same as or the equivalent of the calcium ion scavengeability value of the claimed invention. However, the calcium ion-scavengeability of the present invention is

obtained by a different method than the method used to determine the calcium ion “capturability” value of EP ‘008. Page 6 and page 14 of EP ‘008 disclose the method of determining the calcium ion-capturability of the maleic acid-based polymer. As disclosed on page 14, an aqueous solution of calcium carbonate having a calcium ion concentration of  $1.0 \times 10^{-3}$  mol/L is combined with the polymer. The calcium ion concentration in the solution is measured by a calcium electrode using an ion analyzer to determine the amount of calcium ions which are captured by the polymer.

In contrast, the method for determining the calcium ion-scavengeability of the present invention uses a solution having a calcium ion concentration of 0.0012 mol/L as disclosed on pages 32 and 33 of the specification. As disclosed therein, the calcium ion-scavengeability is determined from a calibration curve. Thus, the calcium ion-scavengeability of the claimed invention is obtained by a different method than the calcium ion-capturability of EP ‘008 so that the values do not correspond directly.

Accompanying this response is a Declaration Under 37 C.F.R. § 1.132 presenting the test data of the calcium ion scavengeability value of the copolymers of EP ‘008 identified in the Examples. The Declaration also presents the test data for the clay-dispersibility in high-hardness water in accordance with the present invention. As demonstrated by the test data in the Declaration, most of the copolymers of EP ‘008 have a calcium ion-scavengeability that is less than 0.40, and thus, outside the claimed range. Moreover, the copolymers of EP ‘008 have a clay-dispersibility in high-hardness water that is significantly less than the 0.50 value of the claimed invention. Thus, the test data in the Declaration demonstrate that the copolymers of EP ‘008 do not have the claimed calcium ion-scavengeability and the clay-dispersibility in high-hardness water.

The clay-dispersibility of the present invention is also determined by a method that is different from the method disclosed in EP '008. As disclosed on page 14, lines 41 and 42 of EP '008, the water used in the measurement is the water supply of Himeji-city, Japan, which has a water-hardness of about 20 ppm. In contrast, the clay-dispersibility in high-hardness water of the present invention uses water having a calcium concentration of 200 ppm. See, for example, page 33, line 26 of the specification. Accordingly, the method of measuring the clay-dispersibility in high-hardness water of the claimed invention is different from the method used to measure the clay-dispersibility in EP '008. The attached Declaration presents the test data comparing the clay-dispersibility in high-hardness water and the copolymers of the Examples of EP '008. As shown in the Declaration, the copolymers of EP '008 have a clay-dispersibility in high-hardness water that is significantly less than the lower limit of 0.50 of the claimed invention.

Claim 1 is specifically directed to a water-soluble polymer having a calcium ion-scavengeability of not less than 0.40 and a clay-dispersibility in high hardness water of not less than 0.50. As shown in the data in the Declaration, the copolymer of EP '008 does not satisfy the combination of the claimed calcium ion-scavengeability and the clay-dispersibility in high hardness water. Accordingly, claim 1 is not anticipated either expressly or inherently by EP '008. Claim 2 depends from claim 1 to recite the specific features of the water-soluble polymer. These features in combination with the claimed calcium ion-scavengeability and clay-dispersibility in high-hardness water are not disclosed in EP '008.

Claims 3 and 4 depend from claims 1 and 2 respectively to recite that the water-soluble polymer is a mixture of polymers A and B, where polymer A has a calcium ion-scavengeability of not less than 0.45 and polymer B has a clay-dispersibility of not less than 0.65 in high-hardness water such that the resulting mixture has a calcium ion-scavengeability of not less than

0.40 and a clay dispersibility of not less than 0.60 in high-hardness water. EP '008 does not disclose a mixture of two water-soluble polymers claimed. The Action refers to Example 1-7 of EP '008 as disclosing the polymer of claims 3 and 4. However, EP '008 discloses a copolymer obtained from a maleic acid-based copolymer and a water-soluble ethylenically unsaturated monomer. The monomer of EP '008 is reacted to copolymerize with the maleic acid-based copolymer. There is no disclosure of a mixture of two polymers as claimed. Furthermore, EP '008 does not disclose a mixture comprising a polymer A having a calcium ion-scavengeability of not less than 0.45 and a polymer B having a clay-dispersibility of not less than 0.65 in high-hardness water. Furthermore, as presented in the attached Declaration, the copolymer of Example 1-7 of EP '008 has a calcium ion-scavengeability of 0.33, which is less than the claimed value of not less than 0.40. The data in the Declaration also demonstrates that the copolymer of Example 1-7 of EP '008 has a clay dispersibility in high hardness water of 0.38, which is outside the claimed value of not less than 0.50 of claim 1 or 0.60 of claims 3 and 4. Accordingly, claims 3 and 4 are not anticipated by EP '008.

Claims 5 and 6 depend from claims 3 and 4, respectively, to recite the specific ratio of the polymer A and polymer B. As noted above, EP '008 does not disclose a mixture of two different polymers so that these claims are not anticipated. Claims 7-12 depend from claims 1-6 to recite a detergent composition comprising the water-soluble polymer. Since the water-soluble polymer of claims 1-6 are not disclosed or suggested in EP '008, claims 7-12 are not anticipated.

In view of the data presented in the attached Declaration and the above comments, claims 1-12 are not anticipated by EP '008 and are in condition for allowance.

### **Rejection Over U.S. Patent No. 5,549,852**

Claims 1-12 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,549,852 to Bell. Bell is cited for disclosing a polymer composition for use in a detergent builder. The rejection is based on the position that Bell discloses a similar process for producing the water-soluble polymers so that the resulting polymers of Bell inherently have the claimed calcium ion-scavengeability and clay-dispersibility.

Bell discloses a detergent builder obtained from a polymer derived from the reaction product of a monocarboxylic acid, a dicarboxylic acid and an acrylic monomer. Bell does not disclose or suggest the calcium ion-scavengeability or the clay-dispersibility of the resulting polymers. The attached Declaration presents the test data of the calcium ion-scavengeability and clay-dispersibility in high-hardness water according to the procedures of the present invention for each of the polymers obtained in Examples 1 through 4 of Bell. As can be seen from the data, the polymers obtained according to Bell have a calcium ion-scavengeability that is outside the claimed limit of not less than 0.40. The data in the Declaration also demonstrate that the clay-dispersibility in high-hardness water is outside the claimed value of not less than 0.50 of claim 1. Accordingly, claim 1 and the claims depending therefrom are not anticipated by Bell since the polymers of Bell do not inherently possess the claimed properties.

As noted above, claims 3 and 4 recite the water-soluble polymer comprising a polymer mixture of a polymer A and polymer B. Bell discloses a process for producing a polymer or copolymer, but does not disclose a polymer mixture including two different polymers as presently claimed. Furthermore, Bell does not disclose a polymer mixture including a polymer A having a calcium ion-scavengeability of not less than 0.45 and a polymer B having a clay dispersibility of not less than 0.65 in high-hardness water where the resulting polymer mixture has a calcium ion-scavengeability of not less than 0.40 and a clay-dispersibility of not less than

0.60 in high-hardness water. Accordingly, claims 3 and 4 are not anticipated by Bell. Bell also fails to disclose the ratio of the polymer A and polymer B as in claims 4 and 5 so that these claims are not anticipated. Bell further fails to disclose the detergent composition comprising the water-soluble of claims 1-6 as in claims 7-12 so that these claims are not anticipated.

In view of the data presented in the Declaration, the polymers of Bell do not possess the claimed calcium ion-scavengeability and clay-dispersibility in high-hardness water so that claims 1-12 are not anticipated.

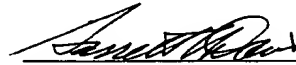
#### **Rejection Over U.S. Patent No. 5,733,857**

Claims 1-12 are also rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,733,857 to Yamaguchi et al. Yamaguchi et al. corresponds to EP '008, which is discussed in detail above. EP '008 is a divisional application of the corresponding European application that is the equivalent of Yamaguchi et al. Note particularly that the three Japanese priority applications of EP '008 are the same priority applications of Yamaguchi et al. Thus, the disclosure of Yamaguchi et al. is the same as EP '008. Accordingly, the above discussion of EP '008 is directly applicable to the rejection over Yamaguchi et al. For the reasons discussed above, the copolymer of EP '008, and thus, the copolymer of Yamaguchi et al., do not have the claimed calcium ion-scavengeability and clay dispersibility in high-hardness water. Accordingly, claims 1-12 are not anticipated by Yamaguchi et al. for the same reasons as discussed in connection with EP '008.

In view of the above comments and the data presented in the Declaration, the polymers and copolymers of the cited art do not have the claimed calcium ion-scavengeability and the

clay-dispersibility in high-hardness water of the present invention. Accordingly, claims 1-12 are allowable over the art of record. Reconsideration and allowance of the claims are requested.

Respectfully submitted,



Garrett V. Davis  
Reg. No. 32,023

Roylance, Abrams, Berdo & Goodman, L.L.P.  
1300 19<sup>th</sup> Street, N.W., Suite 600  
Washington, D.C. 20036  
(202) 659-9076

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